Amendment to the claims:

1 (currently amended): A method for controlling a light emitting device in a communications system ~~during and without disrupting data transmission,~~ comprising:

modulating a light emitting device with a ~~noise level~~ test signal having a level commensurate with a noise level of the communications system and with ~~embedded in a~~ data signal to produce a modulated optical output signal ~~output~~;

acquiring the modulated optical output signal from the light emitting device;

extracting the ~~noise level~~ test signal from the acquired modulated optical output signal by applying one of a lock-in detection algorithm and a linear sweep algorithm;

digitally processing the extracted ~~noise level~~ test signal to calculate power control adjustments; and

controlling output power of the light emitting device by applying the calculated power control adjustments to the light emitting device.

2 (currently amended): A method for controlling a laser in a communications system ~~during and without disrupting data transmission,~~ comprising:

~~generating a noise level test signal having a predetermined characteristic~~;

generating a data signal ~~having a predetermined characteristic~~;

generating a test signal having a level commensurate with a noise level of the communications system;

modulating a laser bias current with the ~~generated noise level~~ test signal and the data signal to produce a modulated laser output ~~signal~~;

generating a modulated laser signal from ~~acquiring~~ the modulated laser output ~~signal~~;

multiplying the modulated laser signal by a sine function of the test signal to generate a first product;

squaring the first product to generate a first squared product;

multiplying the modulated laser signal by a cosine function of the test signal to generate a second product;

squaring the second product to generate a second squared product;

adding the first squared product and the second squared product to generate an extracted test signal;

~~extracting a noise-level test signal from the acquired modulated output signal;~~

determining an average value of the extracted ~~noise-level~~ test signal;

~~determining a characteristic of the extracted noise-level test signal;~~

calculating a laser bias current adjustment from the average value ~~characteristic~~ of the extracted ~~noise-level~~ test signal;

~~calculating a modulation current adjustment from a ratio of the characteristic of the generated noise-level test signal to the characteristic slope of the extracted noise-level test signal;~~ and

~~controlling a laser bias current by~~ applying the calculated laser bias current adjustment to the ~~a~~ laser bias current ~~driver; and~~

~~controlling a laser modulation current by applying the calculated modulation current adjustment to the laser driver~~.

3 (currently amended): The method of claim 2 wherein the ~~noise-level~~ test signal is a sinusoidal signal.

4 (currently amended): The method of claim 2 wherein the ~~noise-level~~ test signal is a saw tooth signal.

5 - 8 (canceled)

9 (currently amended): An apparatus for controlling a laser in a communications system ~~during and without disrupting data transmission,~~ comprising:

a laser driver for modulating the laser with a data signal and with a ~~noise-level~~ test signal having a level commensurate with a noise level of the communications system ~~embedded in a~~ data signal to produce a modulated laser output ~~signal~~ from the laser;

a monitor photodiode for acquiring the modulated laser output and for generating a modulated laser output signal from the modulated laser output;

a digital signal processor for multiplying the modulated laser output signal by a sine function of the test signal to generate a first product, squaring the first product to generate a first squared product, multiplying the modulated laser output signal by a cosine function of the test signal to generate a second product, squaring the second product to generate a second squared product, adding the first squared product and the second squared product to generate an extracted test signal, determining an average value of the extracted test signal, and calculating a laser bias current adjustment from the average value of the extracted test signal ~~extracting a noise-level test signal from the acquired signal and digitally processing the extracted noise-level test signal to calculate power control adjustments~~; and

a servo for ~~controlling output power of the laser by~~ applying the laser bias current adjustment ~~calculated power control adjustments~~ to the laser ~~driver~~.

10 (currently amended): A method for controlling output power of a laser in a communications system having a system noise ~~during and without disrupting data transmission,~~ comprising:

embedding an original test signal having a level commensurate with the [[in]] system noise;

modulating the embedded ~~original~~ test signal and the system noise;

mathematically extracting the embedded test signal from the modulated system noise by applying one of a lock-in detection algorithm and a linear sweep algorithm;

applying a digital signal processing algorithm ~~algorithms~~ to the extracted test signal to calculate power control adjustments from a difference ~~differences~~ between the original test signal and the extracted test signal; and

applying the calculated power control adjustments to the laser.

11 (canceled)

12 (currently amended): A [[An]] method for controlling a laser system in a communications system ~~during and without disrupting data transmission,~~ comprising:

providing a data signal;

embedding a ~~noise-level~~ test signal having a level commensurate with a noise level of the communications system in the ~~embedded in a~~ data signal ~~in system noise of a data signal in a first laser transceiver~~;

transmitting the [[a]] data signal and ~~containing~~ the embedded ~~noise-level~~ test signal ~~embedded in system noise~~ from a ~~the~~ first laser transceiver to a second laser transceiver ~~optical path~~;

receiving the transmitted signal at the second laser transceiver; [[.]]

detecting, recovering and digitally processing the ~~noise-level~~ test signal at the second transceiver by applying one of a lock-in detection algorithm and a linear sweep algorithm to determine a laser characteristic of ~~information about~~ the first laser transceiver ~~and the optical path~~;

sending the laser characteristic ~~information~~ from the second laser transceiver to the first laser transceiver;

receiving the laser characteristic ~~information~~ at the first transceiver; and

adjusting the ~~output characteristics of the~~ first laser transceiver according to the received laser characteristic ~~information~~.

13, 14 (canceled)

15 (new): The method of Claim 2 further comprising steps of:

calculating a modulation current adjustment from the extracted test signal; and

applying the calculated modulation current adjustment to the laser.